

# **COMPILATION OF APPROVED SPECIFICATIONS**

**RHODE ISLAND DEPARTMENT OF TRANSPORTATION  
STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION  
2004 EDITION**

**REVISIONS  
SUPPLEMENTAL SPECIFICATIONS  
SPECIAL PROVISIONS**

**SUPPLEMENT NO. 2**

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**803.0500**

**TEMPORARY DECK UNDERSIDE & SIDE PROTECTIVE SHIELDING**

**DESCRIPTION:** This work shall consist of designing, furnishing, fabricating, erecting, maintaining, removing, and disposing of temporary deck underside and deck side protective shielding at locations shown on the Plans and/or as directed by the Engineer.

The temporary deck underside and deck side protective shielding shall provide for the safe passage of vehicles, pedestrians, and shall provide protection for utilities. The use of the protective shielding is to insure that no debris falls to the roadway or sidewalks below the structure. This protective shielding is to be used for or in conjunction with deck demolition.

**MATERIALS:** At the discretion of the Contractor and as called for in the Contractor's design, deck underside and side protective shielding may be constructed from timber, steel, or aluminum. Steel and aluminum shall conform to the requirements of **SECTION M.05; METALS** of the Rhode Island Standard Specifications for Road and Bridge Construction, 2004 Edition, with all latest revisions.

Timber and hardware shall conform to the requirements of **SECTIONS M.11** and **M.05**, respectively, of the Rhode Island Standard Specifications for Road and Bridge Construction, 2004 Edition, with all latest revisions. The material shall be structural lumber in accordance with the National Design Specifications for stress graded lumber recommended by the National Forest Products Association (NFPA). The grade shall be  $F_b=1200$  psi minimum. Minimum lumber size for underside shielding shall be 3" x 8".

**CONSTRUCTION METHODS:** The deck underside and side protective shielding shall be erected at the locations and to the limits indicated on the contract drawings and/or as directed by the Engineer. All work shall be performed in accordance with the Maintenance and Protection of Traffic Plans, and in accordance with the demolition and construction sequences shown on the Plans and as specified in the Contract Documents.

All shielding shall meet or exceed the following requirements:

1. It shall be the Contractor's responsibility, as part of this item of work, to design and detail the protective shielding to conform to all Federal, State, and Local laws and regulations, as well as to the requirements contained here in this Specification.
2. The shielding shall extend under all areas of concrete decks, safety walks, and safety barriers to be removed. It shall extend horizontally a minimum of 3 feet beyond the bridge railings or safety barriers, and it shall extend vertically to a point 2 feet above the top of the bridge parapet, or to a point 4 feet above the top of bridge safety walks or decks, whichever is higher.
3. The Contractor shall submit shop drawings, stamped by a Professional Structural Engineer registered in Rhode Island, in accordance with **Subsection 105.02; Plans and Shop Drawings**, of the Standard Specifications, of all proposed shielding to the Engineer for his approval prior to installation. The drawings shall include details of all connections, brackets, and fasteners. The various components of the deck underside protective shielding system shall be designed for the anticipated weight of all material and debris to be supported, based on the Contractor's method and sequence of removal, but in no case shall it be designed for less than 150 pounds per square foot. Vertical shielding shall be designed for anticipated loads, or a minimum of 30 pounds per square foot, whichever is higher.

4. The shielding shall be placed and secured in a manner as to prevent it from being blown out by wind. If, in the opinion of the Engineer, the shielding is not secure, then the Contractor shall remove and install it to the Engineer's satisfaction.
5. Shielding shall be placed so as to maintain the existing vertical clearance under the bridge.
6. The Contractor may utilize the existing steel or prestressed concrete beams as supports. However, the Contractor will not be permitted to drill or weld to any existing or new beams, unless otherwise noted on the Construction Drawings.
7. The protective shielding shall not contain any gaps or openings that would allow debris to pass through, and shall be sufficiently strong to support any debris or section of demolished concrete from falling onto the roadway or walkway below.

If the Contractor's operations damage any existing portions of the bridge that are not within the scope of the contract, such damage shall be repaired at the Contractor's expense, and to the satisfaction of the Engineer.

**METHOD OF MEASUREMENT:** "Temporary Deck Underside and Side Protective Shielding" will be measured for payment by the square foot of shielding installed, including the deck side protective shielding, as required by the stage construction sequences and in accordance with the plans and as directed by the Engineer.

**BASIS OF PAYMENT:** The accepted quantity of "Temporary Deck Underside and Side Protective Shielding" will be paid for at the contract unit bid price per square foot as listed in the Proposal. The actual square foot measurement will be determined by the pay limits specified herein. No payment will be made for additional shielding beyond these pay limits, regardless of the approved design. This payment shall constitute full and complete compensation for all labor, equipment, tools, accessories, hardware and incidentals necessary to complete the work, including design and detailing and all installation and removal of the protective shielding, including the deck side protective shielding, all as required by the stage construction sequences and complete and accepted by the Engineer.

Revise **Section 823; Roadway Joints – Expansion and Fixed**, pages 8-125 to 8-131 of the RI Standard Specifications for Road and Bridge Construction, 2004 Edition as follows.

## **SECTION 823**

### **ROADWAY JOINTS – EXPANSION AND FIXED**

- **Add new paragraph (f) to Subsection 823.03.3.**

#### **823.03.3 Asphaltic Expansion Joint System.**

**f. Temporary Bituminous Joint System.** A temporary bituminous joint system must be installed if the contractor is unable to complete the installation of the asphaltic expansion joint system prior to the ambient temperature falling below the minimum manufacturer recommendation. The temporary joint system must include the galvanized steel backing plate and be filled with compacted bituminous asphalt. A joint one-half the depth of the wearing surface shall be sawed and sealed along the temporary joint centerline from curb to curb.

The contractor shall remove and dispose of all unnecessary materials, repair any damage caused by the installation or removal of the temporary system and leave the joint in a condition acceptable for the installation of the final joint system per the manufacturer's recommendations. The contractor may elect to reuse the steel backing plate(s) if the warranty standards can be met; otherwise the Engineer will determine if the plate(s) may be reused or must be replaced.

- **Replace Subsection 823.05.3 with the following.**

#### **823.05 BASIS OF PAYMENT**

**823.05.3 Asphaltic Expansion Joint System.** The Accepted quantities of "Asphaltic Expansion Joint System" of various widths will be paid for at their respective contract unit prices per linear foot as listed in the Proposal. The prices so-stated constitute full and complete compensation for all labor, materials and equipment, the temporary bituminous joint, including the sawed and sealed joint, and for all other incidentals required to finish the work, complete and accepted by the Engineer.

Delete **Section 825; Painting Structural Steel**, pages 8-152 through 8-161 of the Standard Specifications for Road and Bridge Construction, 2004 Edition, and **Special Provision 825.1000; Paint Systems for Structural Steel**, pages AC-39 through AC-42 of the Compilation of Approved Specifications, January – July, 2004 in their entirety and replace with the following:

## **SECTION 825**

### **PAINTING STRUCTURAL STEEL**

**825.01 DESCRIPTION.** This work shall consist of the thorough cleaning; preparation of surfaces; painting or repainting of new or existing steel, galvanized and metalized structures, its components or other steel materials. The above shall be performed at the locations indicated on the Plans or as directed by the Engineer, all in accordance with these Specifications.

**825.01.1 Toxic Caveat.** The Contractor is hereby notified that existing paint systems on the State's bridges may contain toxic substances such as lead, chromium or cadmium, and that these substances are considered to be hazardous to personnel, the environment, and the public proximate to the project. The contractor must plan and take appropriate precautions during the painting operations and for waste disposal to meet the State and Federal requirements for the protection of workers, the public and the environment. Details of these requirements are provided in **SECTION 826; PERSONNEL AND ENVIRONMENTAL PROTECTION**, of these Specifications.

**825.01.2 Protection of Personnel, Public, Environment and the Structure.** This provision covers the requirements for removal and containment of paint and/or corrosion products from any steel bridge or other specified appurtenances during cleaning and painting operations. Conduct all activities associated with the coating work described and specified herein in accordance with all applicable Federal, state and local regulations, **SECTION 826; PERSONNEL AND ENVIRONMENTAL PROTECTION**, the Contract Special Provisions and SSPC-PA Guide 3, A Guide to Safety in Paint Application.

Furnish and have available to the Engineer at all times during the painting operations, and at no additional expense to the Department, four approved respirators for the intended purpose, and other safety equipment needed to permit proper inspection of ongoing work. Furnish the required safety equipment before the start of work. Provide scaffolding and rigging, as needed, in compliance with OSHA regulations to enable safe and ready access to all work areas for inspection purposes.

Protect pedestrians, vehicular, and/or other traffic on or under the bridge or structure, surrounding property, surfaces, buildings, grounds, etc., against damage or disfigurement from surface preparation media, or spatters, splashes, overspray and smears of paint or material. Furnish adequate containment materials for protection.

Remove paint drips, spills or overspray from concrete or other surfaces not designated to receive coatings. Remove debris from cleaning operations, empty paint containers, and other refuse. Correct all damage created at no additional cost to the Department.

**825.01.3 Pollution Controls.** Prevent environmental pollution of air, soil and water caused by surface preparation media, paint spills or overspray, paint chips, dust or other harmful materials. Comply with the regulations of Rhode Island Department of Environmental Management (DEM) and provide notification as required. No extension of contract time or claims for costs will be allowed in order to comply with requirements of regulatory agencies.

**825.01.4 Contractor Applicator Qualification.** When the contract requires painting more than 1,500 square feet of steel surface, the contractor(s) performing coating application must demonstrate qualification by obtaining either The Society for Protective Coatings (SSPC) QP 1 for field painting and SSPC QP-3 certification as appropriate, or the American Institute of Steel Construction (AISC) Sophisticated Paint Endorsement (SPE). Contractors involved in the removal of paint containing lead or other toxic metals shall be certified SSPC QP2, "Standard Procedure Evaluating the Qualifications of Painting Contractors to Remove Hazardous Paint." Qualification must be maintained throughout the painting portion of the project. If it expires or is revoked for any reason, the Engineer shall be notified and may require that a qualified contractor complete the coating portion of the project.

**825.02 MATERIALS.** Provide paint materials that conform to the applicable provisions of **SECTION M.06; PAINT**, of these Specifications and to any manufacturer's recommendations contained herein. In the event of a conflict between the manufacturer's technical data and the requirements of this Section, comply with this Section unless the requirements of the manufacturer are more restrictive. In these cases, advise the Engineer of the discrepancies, in writing, and comply with the Engineer's written resolution. The decision of the Engineer in such cases shall be final.

**825.02.1 Paint Supplier.** Provide all paint material products including primer, intermediate, finish coat and thinners from the same paint supplier to ensure compatibility of components. Use the same paint manufacturer throughout all work. Provide paints that are lead and chromium free.

**825.02.2 Finish Coat Color.** Provide a semi-gloss finish coat in the color specified on the plans, in the Special Provisions or elsewhere in the contract documents. Provide color chips and the Munsel color designation for verification of the color of the finish.

**825.02.3 Literature.** Provide Product Data Sheets (PDS) and Material Safety Data Sheets (MSDS) in accordance with **Subsection M.06.01.1; Literature**, of these Specifications.

**825.02.4 VOC Compliance:** All paint products must have less than 420grams/liter (3.5 pounds/gallon) and must conform to all Federal, State and local requirements at the point of application as determined using EPA Method 24.

## **825.03 CONSTRUCTION METHODS.**

### **825.03.1 Surface Preparation.**

**a. General Requirements.** Surface preparation shall be in accordance with the most recent edition of the Society of Protective Coatings Specifications and any additional requirements contained in the Contract Documents.

**b. Engineer's Access.** Provide safe access and time for the Engineer or his authorized representative(s) for inspection of all phases of work, including but not limited to surface preparation, the application of each coat of paint, including stripe coats, and for the inspection of the completed system. Provide access for sampling and testing paint material components. Samples may be subject to chemical and physical testing. Materials found to be of unsatisfactory quality will be rejected.

**c. Surface Anomalies.** Corner Condition – Remove all sharp corners created by flame cutting or shearing using a grinder. A single pass with a grinder is usually sufficient to break sharp corners and create a chamfer. It is not necessary to grind a radius. Rolled corners do not require grinding.

Stripe-coat all corners resulting from sawing, burning, or shearing operations unless an inorganic zinc-rich primer is used.

Select the coating system and apply it as indicated on plans and/or contract documents. Unless otherwise noted, apply no coating to flange surfaces that will be embedded in concrete, or inside bolt holes, although overspray is permitted.

Preparation of Thermal Cut Edges – Thermal cut edges (TCEs) shall be softened before blast cleaning, as necessary to achieve proper blast profile.

Base Metal Surface Irregularities – Remove all visually evident surface defects in accordance with ASTM A 6 or AASHTO M 160 prior to blast cleaning steel. When material defects exposed by blast cleaning are removed, the blast profile must be restored by either blast cleaning or by using mechanical tools in accordance with SSPC-SP 11.

Weld Irregularities or Spatter – Remove or repair all sharp weld prominences, weld deficiencies (overlap, rollover, excessive concavity, convexity, or roughness) and all heavy, sharp, or loose weld spatter. Occasional individual particles of rounded tight weld spatter may remain, but widespread, sharp, or clustered particles of tight weld spatter must be removed.

**d. Pre-Cleaning:** Remove all oil, grease, and other adherent deleterious substances from areas to be painted, in accordance with SSPC-SP 1 “Solvent Cleaning”, prior to abrasive blast cleaning.

**e. Abrasive Blast Cleaning:** Abrasive blast clean the entire surface in accordance with the cleanliness and profile required by the manufacture’s Product Surface Sheet. The profile shall be assessed per ASTM D 4417. All new structural steel shall be cleaned in accordance with SSPC SP-10, “Near White Blast Cleaning”. If the material for the project is heavily rusted or pitted, or as directed by the Engineer, measure the non-visible contaminant in accordance with SSPC SP12 SC-2 and ensure detectable chloride levels are less than 10 micrograms per square centimeter.

Compressed air supply lines shall be equipped with oil traps and moisture separators. Conduct a white blotter test in accordance with ASTM D 4285 to verify the cleanliness of the compressed air. Conduct the test at least once per shift for each compressor system. Sufficient freedom from oil and moisture is confirmed if no soiling or discoloration is visible on the paper.

**f. Lighting:** Provide adequate lighting for all surface preparation, paint application, and inspection work. Maintain a minimum of 10 foot-candles for surface preparation and painting, and a minimum of 30 foot-candles of general area lighting for inspection. Increase the lighting if workers or other personnel have difficulty seeing. Use explosion-proof lighting.

### 825.03.2 Paint Application.

**a. General Requirements.** Apply coatings in accordance with the Contract requirements, SSPC-PA 1, "Shop Field and Maintenance Painting of Steel" and the manufacturer's instruction. Apply the coating to provide a continuous, uniform film of the specified thickness that is well bonded to the substrate or previously applied coating; is free of laps, streaks, sags, or other visually evident defects; and applied within the manufacturer's specified pot life. Areas that fail any required test shall be repaired as outlined in Removal/Repair of Unsatisfactory Material.

**b. Coating Material Storage.** Record the daily storage temperature range for coating materials and verify conformance with the coating manufacturer's product data sheet. Inventory the components to ensure they are used within the shelf life prescribed by the manufacturer. Record the following in the application log: coating batch numbers from each mixed component, amount and type of thinner used, date of application.

Paint in storage shall not be exposed to temperatures lower than those recommended by the paint manufacturer. Paint exposed to temperatures lower than specified is subject to rejection or retesting.

Any paint which is rejected shall be removed from the project before any painting operations are allowed to continue.

**c. Intermediate and Topcoat.** The color of the topcoat shall be as specified in the contract documents. The intermediate coat color shall contrast with both the primer and final coat. Stripe coats may be tinted as necessary to assure proper coverage. Coating materials used to apply piece marks shall be compatible with the existent and any subsequent coats.

**d. Stripe Coats.** Apply a stripe coat to corners, weld seams, around nuts and bolts or as otherwise directed in the contract documents. Do not apply the full coat any sooner than 15 minutes after the application of the stripe coat, or any later than the manufacturer's recommended recoat times. Inspection personnel shall be notified and be given ample time to verify and approve the stripe coat application. Do not apply the full coat until the Engineer has approved the striping. The coating material used for the stripe coat is typically the intermediate coat, but for painting metalizing the urethane finish coat is striped.

**e. Conditions for Application.** Apply the paint material to clean dry surfaces. Comply with the atmospheric conditions specified below, or the written requirements of the material manufacturer, whichever is most stringent. Do not apply materials when:

- The temperature of the air or substrate is below 40°F or greater than 110°F, or is forecasted to drop below 40°F before the coating dries in accordance with the dry times specified in the manufacturer's technical data sheet.
- The surface temperature is less than 5°F above than the dew point.
- The relative humidity is above 85%.
- There is rain, mist, fog or snow during application and/or cure.

**f. Methods of Application.** Use brushes, rollers, spray equipment, or any combination of equipment recommended by the manufacturer and authorized by the Engineer that provides a finish that is acceptable to the Department.

**g. Recoat Interval.** Comply with the coating manufacturer's minimum and maximum recoat interval for each coating layer. Ensure that each coating layer is sufficiently cured before applying the next scheduled coating layer.

**h. Field Touchup.** Prior to applying field touch-up coatings, verify that all surfaces, including installed bolts, nuts and zinc-rich primer around connection plates are thoroughly cleaned of grease, oil, chalk, bird droppings, lubricants and other surface interference material. Use pressure washing or solvent cleaning, as appropriate, to remove the interference material. Use hand and power tool cleaning for spot repair of localized damage to the coating system. Pressure wash, using 2500 psi water pressure, all surfaces primed with inorganic zinc to remove zinc salts. Do not proceed with touchup and painting until the Engineer has accepted the surface cleaning. Repair any damaged areas of coating and reapply all affected coating layers. Perform field touchup in areas such as around bolts, nuts, and connection plates that had not previously been painted.

**i. Field Applied Finish Coat Application.** Apply urethane finish coat in the field after the Engineer has accepted the touch up (primer and intermediate) and after the structure has been erected on the project site. Verify that the amount of time between the application of the intermediate and the urethane finish is within the coating manufacturer's maximum recoat time, as stated in manufacturer's technical data sheets. Verify that the surface is clean and dry prior to the application of the finish. If grease, oil, or other contaminants become deposited on the intermediate coat, remove it in accordance with SSPC-SP1 prior to the application of the finish coat.

**j. Removal/Repair of Unsatisfactory Material.** The coating system is unsatisfactory if any of the following defects occur: abrasion damage, peeling, blistering, wrinkling, excessive runs or sags. It is also unsatisfactory if there is evidence of application under unfavorable conditions; the workmanship is poor; unauthorized coating material was used; or for other reasons determined by the Engineer.

Remove and replace unsatisfactory coating layers at no additional cost to the Department as specified below.

Comply with the surface preparation requirements of this section and as follows.

- When the defective paint or damage extends to the bare steel or bare steel is exposed in areas less than 4" x 4" in size, clean the surface by power tool cleaning to SSPC-SP11. Feather the surrounding paint to expose a minimum of 1/2" of each coat and to provide a smooth transition into the surrounding intact, adherent material. Select a primer recommended by the manufacturer of the intermediate and finish paint. For new steel, apply a spot coat of organic zinc primer to the prepared surface. Follow with a spot coat of the intermediate and urethane finish.
- When the damage covers an area greater than 4" x 4" in size, blast clean the area in accordance with SSPC SP10, feather the surrounding paint and repair as described above.
- When the damaged or defective paint does not expose the substrate, and for primed areas around and on connection plates, clean the surface by hand or power tool cleaning. Clean in accordance with SSPC SP2 or SSPC SP3 to remove oxidation, zinc-salts, or contamination from the zinc-rich primer. Do not burnish or polish the surface. Supplement hand and power tool cleaning with pressure washing (1500 psi minimum) accompanied by scrubbing with stiff bristled brushes or other means as necessary. Feather the surrounding material to expose a minimum of 1/2" of each coat and to provide a smooth transition into the surrounding intact, adherent coating material. Solvent clean in accordance with SSPC SP1 and re-paint the affected areas with the intermediate and urethane finish.

- For all repairs, roughen the paint in overcoat areas to assure good adhesion of the overcoat material to the underlying paint.

**k. Scaffolding.** Use rubber rollers or other protective devices to prevent damage to the finished coatings. In particular, sufficient support pads shall be utilized for bracing on fascias. Temporary supports or attachments for scaffolding or forms shall not damage the coating system. Areas damaged by scaffolding shall be repaired in accordance with Removal/Repair of Unsatisfactory Material in **Subsection 825.03.2(j)** above.

**l. Technical Supervision.** Coating manufacturer's representation will be required for shop and field applications. The coating representative shall be present to provide the Contractor with an evaluation of the surface preparation and to provide such aid and instruction in the application of the coating system as required to obtain a satisfactory result that meets the approval of all parties. At a minimum, the services of this representative will be required at the start up of all shop and/or field operations. In addition, services may be required on an "as needed" basis until painting is satisfactorily completed. The Contractor/fabricator is responsible for securing the services of the technical representative.

**825.03.3 New Steel Structures.** Work under this paragraph shall include only those structures being built new or structures whose superstructure is being replaced in its entirety. New steel utilized in partial replacement or rehabilitation shall be addressed in **Subection 825.03.4; Existing Steel Structures**, and in the Contract Documents.

**a. General.** The coating system shall be an approved NEPCOAT three-coat system and shall conform to the requirements of **SECTION M.06; PAINT**, of these Specifications and the following:

Exterior Steel Surfaces. The system shall consist of a prime coat, intermediate stripe coat, intermediate coat, and topcoat.

Interior Steel Surfaces. The coating system for the interior surfaces such as: open box girders, arch ribs and ties and tubular wind bracing shall consist of a zinc-rich epoxy primer and epoxy top coat. Select the same primer and epoxy topcoat for application to both interior and exterior surfaces of the same steel member. Interior surfaces require no urethane finish coat. The topcoat applied to interior surfaces shall be white.

**b. Priming Faying Surfaces.** Coatings applied to contact surfaces of bolted connections between primary members shall satisfy the requirements of the Research Council on Structural Connections (RCSC). Prior to shop bolting, verify that the coating on faying surfaces is applied at the recommended dry film thickness and that the temperature adjusted cure time for shop and field slip critical bolted faying surfaces are within the range previously validated by testing. Verify cure in accordance with ASTM D 4752 or the manufacturer's requirements.

Apply the zinc-rich primer to all surfaces. Do not apply intermediate and finish coats to faying surfaces, connection areas, and within 2" of a connection area that is to be welded. Mask or otherwise protect these surfaces to prevent the application of intermediate and finish coats. Apply the intermediate coat to completely and thoroughly cover all zinc-rich primed steel surfaces that will be embedded in concrete.

Apply the urethane finish coat to the same surfaces coated with the intermediate, except those surfaces that will be embedded in concrete.

**c. Bolts (Fasteners).** Prepare bolts for priming that have been installed and final tightened before shop priming as necessary so as ensure that exposed bolt surfaces that have been abrasive blast cleaned will satisfy the requirements outlined in Table 1.

**TABLE 1**  
**SURFACE PREPARATION REQUIREMENTS FOR FASTENERS & BOLTS**

Item	Shop-Installed Bolts Prior to Cleaning & Primer Application		Shop- or Field-Installed Bolts to Primed Steel	
	Coating System	Surface Preparation	Coating System	Surface Preparation
Black Iron Bolts	OZ or IOZ	SSPC SP10	OZ	SSPC-SP 1 and as req'd to remove lubricant
Galvanized (Mechanical or Hot Dip)	OZ	SSPC-SP 1	Intermediate Coat	SSPC-SP 1, 2, 3, and/or 12

OZ= Organic Zinc-Rich Primer

IOZ= Inorganic Zinc-Rich Primer

If the zinc coating on shop-installed galvanized bolts is damaged during shop abrasive blast cleaning or tightening, it may be left as is if the entire coating system (including the zinc-rich primer) will be applied over the fasteners.

Remove the lubricant from bolts. The Fabricator shall obtain the identity of solvents and methods needed to remove the lubricant. The Fabricator shall also consult with the coating supplier to assess the compatibility of the coating with any lubricant residue. The Fabricator shall supply to the General Contractor, shop and field painters, the Engineer and other interested parties the information concerning the lubricant removal and the cleanliness necessary for satisfactory adhesion of the intermediate coat.

Any dye coloring remaining on galvanized nuts after weathering or after removing the lubricant is not believed to be detrimental to coating performance or appearance. Use a white cloth wipe test to confirm that all lubricant and non-absorbed dye has been removed; only residual "stain" is permitted to remain on the surface.

**d. Shipping, Storage, and Erection of Steel.** Use extreme care in handling, storing, shipping and erecting the steel to avoid damage to the coating system. Do not move coated steel in the shop until sufficient cure time has elapsed to ensure that no damage will be done to the fresh coating.

Install padding on hooks and slings used to hoist the steel and use softeners approved by the Engineer to insulate the steel from binding chains. Place small structural pieces in such a manner that no rubbing will occur during shipment.

Store the steel at the job site on pallets or by other means to prevent members from resting directly on the ground or from falling onto each other.

**825.03.4 Existing Steel Structures.** Work under this paragraph shall include only those structures that are being rehabilitated or where new steel is used for partial replacement. Specific requirements may be found in the Contract Documents.

**a. Protection of Painted Surfaces.** Protect freshly coated surfaces and those surfaces not scheduled for painting from over blast and stray abrasive during blast cleaning operations. Previously coated surfaces damaged by subsequent blast cleaning operations shall be cleaned in accordance with SSPC SP10 and recoated.

**b. Surface Preparation.** Obtain the Engineer's approval of the preparation of all surfaces to be painted before applying any paint.

Surface preparation and coating requirements are dependent upon the scope of work and the type and condition of the existing coating system. Table 2 provides the required surface preparation methods for four scenarios. Detailed descriptions of the surface preparation methods follow the table. Specific coating material requirements for each surface preparation method are provided in **SECTION M.06; PAINT**, of these Specifications.

**TABLE 2**  
**SURFACE PREPARATION METHODS**

Scope of Work	Surface Preparation	Existing Coating System
Spot Prime and Overcoat	Method 1	Alkyd Coatings
Spot Prime and Overcoat	Method 2	Zinc-rich or Metallizing with Topcoat
Zone Painting	Method 3	Alkyd Coatings
Zone Painting	Method 3 or Method 4	Zinc-rich or Metallizing with Topcoat

Method 1: Spot Prime and Overcoat an Existing Alkyd Coating System. Localized areas of corrosion or coating breakdown shall be spot cleaned using vacuum shrouded power tools in accordance with SSPC-SP3, "Power Tool Cleaning". Feather the edges of the power tool cleaned areas. The intact alkyd coating should be prepared for overcoating by cleaning in accordance with Low-Pressure Water Cleaning (LP WC) of SSPC-SP12. The minimum acceptable water pressure is 1500 psi. Use low pressure water cleaning to remove chalk, pigeon droppings, dirt and other deleterious materials from the surface.

Method 2: Spot Prime and Overcoat an Existing Coating System that consists of a zinc-rich primer or metallizing and a urethane finish coat. Localized areas of corrosion or coating breakdown shall be spot cleaned using vacuum shrouded power tools in accordance with SSPC-SP11, "Power Tool Cleaning to Bare Metal" or using vacuum blast cleaning equipment in accordance with SSPC-SP10, "Near White Blast Cleaning". Feather the edges of the repaired area. The intact topcoats (epoxies or urethanes) should be prepared for overcoating by hand sanding to roughen the surface.

Method 3: Abrasive Blast Clean to remove all coating material from a well defined zone (portion of the structure). Blast clean steel in accordance with SSPC SP10, "Near White Blast Cleaning". The surface area of the steel to be blast cleaned shall be no greater than the surface area of steel that can be primed during the same day. The maximum time lapse between surface preparation and application of the prime coat shall not be greater than 8 hours, unless atmospheric controls are used to prevent "rust back". Should any "rust back" occur prior to priming, re-clean surfaces to provide the specified degree of cleanliness. The abrasive blast profile should be in accordance with the manufacturer's requirements as stated on the product data sheets.

Method 4: Water Wash and Ultrahigh Pressure Water Clean in a well defined zone (portion of the structure). Thoroughly pressure wash all surfaces in the zone that will be coated, including areas of limited access such as crevices between back to back angles. The cleaning may be conducted in a two step process. Low pressure washing to remove the loose debris, followed by ultrahigh pressure water cleaning to remove all existing coating and corrosion from the steel surfaces scheduled to be coated.

Comply with the requirements of SSPC- SP 12, "Surface Preparation and Cleaning of Steel and Other Hard Materials by High- and Ultrahigh-Pressure Water Jetting Prior to Recoating". Use pressures greater than 25,000 psi and hold the nozzle 2 to 10 inches from the surface. To remove heavy scale, the nozzle may need to be held 0.25 inches from the surface.

Cleanliness requirements - Cleaned steel surfaces that are scheduled to be painted shall conform to the Visual Surface Preparation Definitions of the surface condition WJ-3 in SSPC SP12.

The use of rust inhibitors is prohibited. Medium "rust back" is permitted. Steel surfaces not primed within 72 hours shall be re-cleaned by water jetting.

Collect all water and paint chips dislodged by the water cleaning process.

Use potable filtered water for the washing to achieve a surface that is free of paint, corrosion and visible contaminates. Reduce detectable chloride levels to 10 micrograms/square centimeter or less.

**c. Limited Access Areas.** The design of the structure may create areas of limited access which can not be cleaned to the specified degree of surface preparation across every square inch of the surface. In these cases provide surface preparation as follows.

Thoroughly clean all areas that can be viewed without the use of mirrors to the specified degree of cleanliness. Localized areas of limited access due to the configuration of the structure may prevent the specified degree of cleanliness from being achieved. In these instances, at a minimum, remove all loose coatings. Inspect the surfaces by touch, using a putty knife, and by using inspection mirrors. Cleaning and painting of these areas may require the use of specialized equipment. If the limited access area is a crevice or gap from which pack rust cannot be removed, such as between mating plies or between back-to-back angles or between structural members, apply sealants/caulks in order to seal the top and side surfaces to prevent moisture intrusion. Do not caulk the bottom crevice. Use sealants/caulks compatible with the coating system and Provide written verification from the coatings supplier as to the compatibility of the sealant/caulk and coating.

**825.03.5 Painting Galvanized Surfaces.** White corrosion deposits such as wet storage stains must be removed before coating. Overcoat with any of the NEPCOAT approved intermediate coats followed by the application the compatible NEPCOAT approved urethane finish coat.

Aged galvanized surfaces that have weathered for 12 months or more can be coated after the surfaces have been cleaned by low pressure water washing (minimum 2500 psi water pressure).

Newly galvanized surfaces that have been exposed to less than 12 months of weathering must have the surfaces lightly abraded by hand sanding or brush-off blast cleaning using a fine abrasive (200 to 500 microns).

**825.03.6 Painting Metalized Surfaces.** The paint system shall consist of a recoatable epoxy, a stripe coat of urethane and a full coat of urethane finish coat. The coating materials shall be selected from the approved list provided in **SECTION M.06; PAINT**, of these Specifications.

**a. Shop Application.** Apply the epoxy sealer to the metalizing as soon as possible after the Engineer has accepted the metalizing and no later than 8 hours after the metalizing application. If more than 8 hours elapses, provide written recommendations from the metalizing supplier and paint (sealer) manufacturer that indicate what steps must be taken to remove the oxidation from the metalized surface prior to sealer application. Do not implement the steps without written approval from the Engineer. Apply a stripe coat of urethane to all edges and bolted connections, followed by a full finish coat of urethane.

**b. Stenciling of Final Product.** After the final coat of paint has dried, stencil information about the project on the inside face of the fascia member at the near and far abutment ends unless directed otherwise by the Engineer. Use suitable black paint to stencil uniform block lettering 2 to 3 inches high. Stencil the following information

- The bridge identification number,
- The month and year of completion,
- The specification identification of the cleaning method, and
- Identification of the system (for example: Z, E, U) with the name of manufacturer

**c. Quality Control/Quality Assurance.** Furnish the Engineer with the following Equipment and Standards:

- PTC Surface Temperature Thermometer
- Psychron 566 Psychrometer (Battery Operated) with two sets of new batteries
- Psychrometric Charts for Dew Point and Relative Humidity
- SSPC VIS Standard appropriate for the specified degree of cleaning:
  - SSPC VIS 1, "Visual Standard for Abrasive Blast Cleaned Steel"
  - SSPC VIS 3, Visual Standard for Power- and Hand-Tool Cleaned Steel"
  - SSPC VIS 4/NACE VIS 7, "Guide and Reference Photographs for Steel Surfaces Prepared by Waterjetting"
- Wet film thickness gage
- Positector 6000 Coating Thickness Gauge
- NIST (NBS) Calibration Standards
- SSPC Surface Preparation Standards appropriate for the surface preparation requirements of the Contract Documents.

Conduct and document an on-going quality control inspection of the materials, prepared surfaces, and the prime, intermediate, and topcoat application as necessary to assure that all work is performed in strict compliance with the Contract Documents and the manufacturer's instructions. The minimum inspections required are identified below. Conduct the inspections at the minimum frequencies specified herein and describe the test procedures in a Quality Control Program. Submit the Program for Engineer review and acceptance prior to beginning the work.

- Inspect steel substrate prior to the start of surface preparation work
- Check ambient conditions/compressed air cleanliness at 4 hour intervals
- Monitor material storage, mixing, and coating application
- Assure dry film thickness and continuity of each coat
- Verify dry time, curing, and cleanliness of each coat prior to the application of next coat
- Touch up and repair damaged or defective coats

**d. Submittal Requirements.** Submit the following information to the Project Engineer a minimum of 14 days prior to beginning the work:

- Finish coat color chips. Submit a color chip of the finish coat.
- Paint Certifications. Provide the brand names of the products selected for the coating system and the test results for the paints identified in "Material Certification" of **SECTION M.06; PAINT**, of these Specifications.
- Quality Control Plan. Provide written plans for verifying the application of the paint coats, in accordance with the inspection points identified in "Quality Control/Quality Assurance" of the Contract Documents.
- Work Schedule. Provide the schedule for surface preparation, painting, shipping, and field touch up. Notify the Engineer a minimum of one week prior to starting surface preparation.

**e. Pre-Construction Meeting.** Arrange for a meeting at the site where the surface preparation and painting is to be done. Arrange the meeting 1 month in advance of starting the work to discuss the project requirements with the Department, and to allow for an examination of the surface preparation and paint application equipment, including inspection instrumentation.

#### **825.04 METHOD OF MEASUREMENT.**

**825.04.1 Painting Structural Steel.** "Painting Structural Steel," i.e., new steel, will be measured by the number of square feet of steel actually painted in accordance with the Plans and/or as directed by the Engineer. Cleaning, surface preparation and paint systems will be considered as incidental to the painting work and, therefore, will not be measured separately.

**825.04.2 Painting Existing Structural Steel.** "Painting Existing Structural Steel" will be measured by the number of square feet of steel actually painted in accordance with the Plans and/or as directed by the Engineer.

**a. Surface Preparation.** "Surface Preparation" will be measured by the number of square feet of steel surface actually prepared in accordance with the Plans and/or as directed by the Engineer. Separate levels of surface preparation necessary to accomplish the final specified surface preparation shall not be measured separately for payment but shall be considered included in the single square foot measurement.

**825.04.3 Lump Sum Alternative.** In certain cases any or all of the above items of work may be paid on a lump sum basis. In such cases, no measurement will be required.

**825.04.4 Personnel and Environmental Protection.** "Personnel and Environmental Protection" shall be measured in accordance with the appropriate paragraphs in **SECTION 826** of these Specifications.

**825.05 BASIS OF PAYMENT.**

**825.05.1 Painting Structural Steel.** The accepted quantity of "Painting Structural Steel" will be paid for at either the contract unit price per square foot or the contract lump sum price, as the case may be, as listed in the Proposal. The price so-stated constitutes full and complete compensation for all labor, materials, and equipment including cleaning, surface preparation, selection of paint system, painting and all other incidentals required to finish the work, complete and accepted by the Engineer.

**825.05.2 Painting Existing Structural Steel.** The accepted quantity of "Painting Existing Structural Steel" will be paid for at either the contract unit price per square foot or the contract lump sum price, as the case may be, as listed in the Proposal. The price so-stated constitutes full and complete compensation for all labor, materials, equipment, selection of paint system, and all other incidentals required to finish the work, complete and accepted by the Engineer.

**a. Surface Preparation.** The accepted quantity of "Surface Preparation" will be paid for at either the contract unit price per square foot or the contract lump sum price, as the case may be, for the final level of surface preparation as listed in the Proposal. Separate levels of surface preparation necessary to accomplish the final specified surface preparation shall not be paid for separately but shall be considered included in the single square foot or lump sum for payment. The price so-stated constitutes full and complete compensation for all labor, materials, equipment, and other incidentals required to finish the work, complete and accepted by the Engineer.

Delete **Subsections 913.02 and 913.04; Trafficpersons – Qualifications and Method of Measurement**, pages 9-30 and 9-31 of the RI Standard Specifications for Road and Bridge Construction, 2004 Edition and replace with the following:

## **SECTION 913**

### **TRAFFICPERSONS**

**913.02 QUALIFICATIONS.** Police officers shall wear regulation uniforms and should be regular, reserve or special officers of the communities in which they serve.

High-visibility safety apparel should be worn by all police officers providing traffic control. The apparel background (outer) material color shall be either fluorescent orange-red or fluorescent yellow-green, and the retroreflective material shall be either orange, yellow, white, silver, yellow-green, or a fluorescent version of these colors, and shall be visible at a minimum distance of 1000 feet. The retroreflective safety apparel shall be designed to clearly identify the wearer as a person.

**913.04 METHOD OF MEASUREMENT.** Services of “Trafficpersons” will be measured for payment by the number of hours for each person rendering services in accordance with directions of the Engineer. This is to include, however, only such trafficpersons as are employed within either the limits of the construction right-of-way for the project, upon detours stipulated in the Contract; or upon detours ordered by the Engineer. Trafficpersons furnished by the Contractor for continued use of a detour, bypass or temporary traffic control beyond the period for which the Engineer deems such trafficpersons necessary to the proper completion of the project, or at locations where traffic is unnecessarily restricted by the Contractor’s method of operation will not be measured for payment.

Delete **Subsection 914.02; Flagpersons – Qualifications**, page 9-31 of the RI Standard Specifications for Road and Bridge Construction, 2004 Edition in its entirety and replace with the following:

## **SECTION 914**

### **FLAGPERSONS**

**914.02 QUALIFICATIONS.** Flagpersons must be trained in safe traffic control practices and public contact techniques, be thoroughly familiar with the most recent publication of the “Flagging Handbook,” published by the Federal Highway Administration and must possess a certificate of satisfactory completion from a training course approved by the Department. All flagpersons should be able to demonstrate the following abilities:

- a. Receive and communicate specific instructions clearly, firmly and courteously;
- b. Move and maneuver quickly in order to avoid danger from errant vehicles;
- c. Control signaling devices (such as STOP/SLOW paddles, flags and lights) in order to provide clear and positive guidance, in frequently changing situations, to drivers approaching a Traffic Control zone;
- d. Understand and apply safe traffic control procedures, sometimes in stressful or emergency situations; and
- e. Recognize dangerous or potentially dangerous traffic situations and alert workers to the situation.

Flagpersons must wear attire appropriate for construction site work, and high-visibility safety apparel shall be worn by all flagpersons actively engaged in providing traffic control. The apparel background (outer) material color shall be either fluorescent orange-red or fluorescent yellow-green, and the retroreflective material shall be either orange, yellow, white, silver, yellow-green, or a fluorescent version of these colors, and shall be visible at a minimum distance of 1000 feet. The retroreflective safety apparel shall be designed to clearly identify the wearer as a person.

Flagpersons unqualified or unable to meet the above requirements or who are, for any reason, unable to provide proper and effective traffic control may be removed at the discretion of the Engineer. In such instances, the Contractor shall provide qualified replacement flagpersons and shall maintain the required traffic control measures for the work site at all times.

Delete **Subsection 929.03.6 (c); Concrete Curing Box**, page 9-56 of the RI Standard Specifications for Road and Bridge Construction, 2004 Edition in its entirety and replace with the following.

## **SECTION 929**

### **FIELD OFFICES AND MATERIALS LABORATORY**

#### **929.03.6 Special Requirements for Materials Laboratory.**

**c. Concrete Curing Box.** A concrete cylinder curing box shall be provided and shall conform to the following minimum requirements: approximate internal dimensions of 54 inches in length; 18 inches in width; and 17 inches in depth. The box shall be insulated, hinged at the back and with a lock at the front. The box shall be made of a durable, rust proof material with a moisture-proof seal between the lid and the box. The box shall be leak-proof and be able to hold a pool of water at the bottom of the container approximately 4 inches deep. A drainpipe shall be provided through the side of the box for maintenance purposes. Suitable means of support shall be provided to hold the concrete cylinders above the water surface. A thermometer which can be read from the outside shall be installed to measure the internal temperature of the box. A thermostat shall maintain the water at a uniform temperature of  $73^{\circ}\text{F} \pm 3^{\circ}\text{F}$  using heating or cooling cycles throughout an ambient temperature range of  $-10^{\circ}\text{F}$  to  $100^{\circ}\text{F}$ .

**1. Equal Characteristics.** A concrete curing box of a design and manufacture different from that described above, but which possesses equal characteristics may be employed provided that it is approved in writing by the Engineer.

Delete **Special Provision 929.1000; Field Offices and Materials Laboratory**, page AC-45 in the Compilation of Approved Specifications, January - July 2004 in its entirety and replace with the following.

**929.1000**

**FIELD OFFICES AND MATERIALS LABORATORY**

**DESCRIPTION.** The items of computer equipment and software to be provided for this Contract in accordance with **Para. c. of Subsection 929.03.5; Special Requirements for Field Office**, of the RI Standard Specifications for Road and Bridge Construction, 2004 Edition, consist of the following:

1. One (1) wide carriage - 24 pin printer (NEC Pinwriter P6300, Okidata Microliner, or Panasonic) or approved compatible equal.
2. One (1) Laser Printer capable of printing standard and custom paper sizes from 3 by 5 inches to 11 by 17 inches. Print quality shall be 1200 by 1200 dpi minimum resolution and have a minimum of 64 MB RAM. The printer must be setup and shared by both computers.
3. Two (2) IBM PC compatible computers with a Pentium 4 Processor at 2.4 GHz, 256K cache (minimum); 533 MHz system bus/512 L2 Cache; 512 MB 266 MHz RAM (minimum); 40 GB hard drive (minimum); 64 MB Graphics card DRAM or VRAM (minimum); 10/100 Network Interface Card; 1.44 MB 3.5" floppy disk drive; 48X CD ROM (IDE); 101 key enhanced keyboard; mouse, 56K bps modem; PCI HDD/FDD controller; 2 serial and 1 parallel port and 2 Version 2.0 USB ports (the computer case shall have front USB 2.0 ports). Installed software shall include: Microsoft Windows 2000 with latest service packs; Microsoft Office Professional (2000 version or better) with latest service packs; Word Perfect for Windows (latest version); McAfee Anti-Virus (2005 or latest version) with subscription support for the life of the project.
4. Two (2) 17" (16" viewable minimum) SVGA low radiation VESA compliant monitors with 0.27 MM (maximum) dot pitch.
5. A 450 VA backup power supply.
6. Dust shields and a security cabinet capable of physically containing all hardware, software and accessories.
7. One (1) desktop copying machine with an automatic document feeder, or a compatible machine approved by the Engineer.
8. One (1) approved facsimile machine meeting the following minimum standards: desktop transceiver; automatic fax/tel switch with only one phone line needed; 10 page document feeder; 9600 bps modem speed with automatic fallback; answering machine interface; 20 location capacity; one-touch dial with 16 locations; PSTN line connection; monitor speaker; 16 character LCD size; local copy function; status/error indicators; transmit and receive confirmation reports; no more than 15 pounds in weight; 120V-60 HZ power requirement; built-in handset; image control resolution of 200 x 100 ipi at standard, 200 x 200 ipi at fine, and 200 x 400 ipi at super-fine; 16 level gray scale; automatic redial 2 times at 3 minute intervals and 128 KB memory capacity.

9. The Contractor shall provide maintenance and supplies for the life of the project. Supplies shall include regular one (1) part form-feed paper 9.5" x 11"; NCR type four (4) part form-feed carbonless black print perforated paper 9.5" x 11", with the first page white, second page canary, third page pink and the fourth page gold; 3.5" DSHD floppy disks, extra printer ribbon, toner, inks, paper and all other required supplies as determined by the Engineer. All supplies shall be provided with the original installation of the computer equipment and facsimile machine, and when requested by the Engineer.

10. The Contractor shall provide a separate phone line for the computer and the facsimile machine.

Delete **Subsection M.05.07.2; Metalizing – Blast Abrasive**, page M-30 of the RI Standard Specifications for Road and Bridge Construction, 2004 Edition in its entirety and replace with the following.

**M.05.07**

**METALIZING**

**M.05.07.2 Blast Abrasive.** Material shall be fresh, dry and sharp. The grain size shall be such as to provide a surface profile of 2.0 to 3.0 mils (approximately 30 to 70 mesh). In no case may round, soft sand be used. Samples of the abrasive shall be submitted to and approved by the Engineer prior to the commencement of any work.

The Contractor shall verify that abrasive cleaning materials meet the requirements of SSPC AB2, “Cleanliness of Recycled Ferrous Metallic Abrasives,” or SSPC AB 3, “Newly Manufactured or Remanufactured Steel Abrasive.” The condition and cleanliness of the recycled abrasives shall be in accordance with the fabricators approved quality control program as per SSPC QP3 and/or AISC Special Paint Endorsement.

Delete **SECTION M.06; PAINT**, pages M-31 and M-32 of the RI Standard Specifications for Road and Bridge Construction, 2004 Edition in its entirety and replace with the following.

## **SECTION M.06**

### **PAINT**

**M.06.01 GENERAL.** Obtain certification from the coating manufacturer that all paint materials satisfy composition and testing requirements, are in conformance with the approved qualified products list or other applicable requirements, and will not exceed the manufacturer's specified shelf life before use.

Materials will be rejected if the material arrives at the application site in containers other than original, unopened containers; if a container has a break in the lid seal or a puncture; or if the coating materials have started to polymerize, solidify, gel, or deteriorate in any manner.

There shall be no significant difference in color between batches of finish paint used on an individual structure. The tri-stimulus color value shall be no greater than a  $\Delta E$  of 2. The Volatile Organic Content (VOC) shall comply with prevailing federal and state regulations.

#### **M.06.01.1 Material Certification.**

Test Data: Have the coating manufacturer or an approved laboratory test a sample from each production batch and forward the results to the Resident Engineer. Provide the following test data for each of the coating material components (primer, intermediate and finish coats):

- Infrared spectra (2.5  $\mu\text{m}$  to 15  $\mu\text{m}$  (2.5 to 15 microns))
- Mass per liter (weight per gallon), at 25°C (77F)
- Viscosity in Krebs Units, at 25°C (77F)
- Percent solids by mass (weight)

**M.06.01.2 Literature.** Product data sheets shall be supplied with each of the products and shall include but not be limited to the following information:

**a. Basic Description.** Generic type, recommended service environment/use, recommended substrates, recommended surface preparation, recommended compatible coatings and recommended thinners.

**b. Physical Characteristics and Performance.** Solids by volume of the mixed components, recommended thickness per coat, weathering ability, minimum and maximum recoat interval and cure requirements.

**c. Application Instructions.** Mixing instructions, pot life for catalyzed materials, temperature application limitations, instructions for application by spray including equipment recommendations, cleanup recommendations, and storage conditions.

**d. Solvent Identification Sheets.** Solvent Identification Sheets shall indicate a listing of the volatile portions of vehicle and categorize solvents by type and photochemical reactivity.

**e. Product Certification.** Product Certification shall be provided on materials used to meet State Department of Transportation Specifications.

**f. Material Safety Data Sheets.** Material Safety Data Sheets (MSDS) shall be provided to the Contractor and Engineer and shall accompany all shipped materials so the person receiving the material is aware of storage requirements and of the hazards presented by the products. Additional copies of the MSDS shall be available upon request.

**M.06.01.3 Shipping and Delivery.** All paint shall be delivered to the shop or jobsite in their original containers, unopened, and with labels intact.

All coating layers in the Paint system shall be supplied by the same manufacturer.

The Contractor/fabricator shall insure that sufficient quantities of paint are ordered. All finish coat material shall be supplied from the same lot or batch number.

Unless otherwise specified, all paint furnished shall be delivered in metal containers that are U.S. Standard 5 (five) gallon size or the similar metric equivalent. One gallon containers may be used for small quantities only for touch-up or spot maintenance work.

All containers shall be labeled in accordance with ANSI Z129.1-2000 "Hazardous Industrial Chemicals- Precautionary Labeling"

The following information shall be listed in clear, legible type on the label of each container for each product:

- Manufacturer's name and complete address
- Product name including component type, if applicable
- Color name or number of the particular product or component
- The lot and/or batch number of the product and components
- The date of manufacture of the product and components
- Identification of any toxic substances contained in the product.

**M.06.01.4 Sampling.** The contractor is required to provide to the Department for testing an unopened container of each component of paint from the project site. Provide containers that are representative of each production batch of paint used on the project. A production batch is one distinct, identifiable unit of production of material outlined in the manufacturer's quality control plan. The Department reserves the right to sample any container of paint material on the job site. No paint shall be applied until the batch sample has been approved by the Department.

**M.06.02 PAINT SYSTEMS.** The paint shall be selected from either the NEPCOAT Qualified Products List or from the qualified products list in this document, as appropriate for the substrate, or as specified in the Contract Documents.

**M.06.02.1 New Structural Steel.** NEPCOAT approved paint systems are required for new structural steel that is fabricated and painted in the shop. The intermediate and finish coats of NEPCOAT systems may be used to overcoat galvanizing. If the galvanizing is damaged, apply one of the NEPCOAT approved organic zinc-rich primers before applying the intermediate and finish coat.

**M.06.02.2 Metallized Steel.** Approved coating systems for top coating metalizing shall consist of a recoatable epoxy sealer and urethane finish. The recoatable epoxy shall be thinned in accordance with the manufacturer's instructions, for use in sealing the metalizing prior to the application of a urethane finish. The coating systems in Table 1 are approved.

**TABLE 1**

Coating Supplier	Recoatable Epoxy for Sealing	Urethane Finish
Carboline	Carboguard 888	Carbothane 133 HB
Sherwin Williams	Recoatable Epoxy B67 Series	Hi-Solids Polyurethane B65 Series
Tnemec	Series 27 Typoxy	Series 73 Endura Shield
International	Interseal 345	Interthane 870

**M.06.02.3 Existing Steel Structures.** Coating material selection is dependent on the method of surface preparation as shown in Table 2. Surface preparation methods are described in **SECTION 825; PAINTING STRUCTURAL STEEL**, of these Specifications.

**TABLE 2**

Coating Materials – 3 Coat Systems	Surface Preparation Method	Existing Coating System
System A – Waterborne System (Noxyde) System B - Calcium Sulfonate	Method 1	Alkyd Coatings
System C – NEPCOAT approved	Method 2	Zinc-rich Primer or Metallized & Urethane Topcoat
System D – MCU, NEPCOAT approved	Method 3	Alkyd Coatings
System C – NEPCOAT approved	Method 4	Zinc-rich Primer or Metallized & Urethane Topcoat

**a. System A.** The 3-coat acrylic system in Table 3 consists of a solvent borne primer and waterborne intermediate and finish coat that is intended for spot priming and full overcoat. Products are available through Rust-Oleum Distributors.

**TABLE 3**

Waterborne	Mathys Coatings	Thickness
Spot Prime	Pegarust	8 mils DFT
Full Overcoat	Noxyde	7 mils DFT
Full Overcoat	Rust Acryl 3700	1.5 to 2.5 mils DFT
Surface Preparation – Power Tool Clean (SP3) followed by Water Washing using 3500 psi.		

**b. System B.** The 3-coat solvent borne system in Table 4 is intended for spot priming and full overcoat. Products are available through CPC Corporation of Durham, Connecticut. Consideration will be given to other generically similar products that contain a minimum of 22% crystalline calcium sulfonate in the dry film.

**TABLE 4**

Solvent borne	CPC Corporation	Thickness
Spot Prime	Chemotex Bridgecote 4100	7 to 10 mils
Full Overcoat	Chemotex Bridgecote 4100	7 to 10 mils DFT
Full Overcoat	Generic silicone alkyd finish coat *	2 to 3 mils DFT
Surface Preparation – Power Tool Clean (SP3) followed by Water Washing using 3500 psi.		

\* Generic silicone alkyd must contain 30% silicone. May be obtained from a supplier such as Keeler-Long.

**c. System C.** This system consists of any approved NEPCOAT coating systems, except those which include an inorganic zinc-rich primer. Coating systems with inorganic zinc-rich primers are only to be used on new steel in the shop. Systems with organic (epoxy or urethane) zinc-rich primers are to be used for renovation work on existing steel structures. Surface preparation requirements are provided in **Subsection 825.03.4, Existing Steel Structures**, of these Specifications.

**d. System D.** This system consists of a 3 coat moisture cured urethane (MCU) coating system that has been approved by NEPCOAT. The system consists of a zinc-rich primer, an intermediate coat pigmented with micaceous iron oxide and an aliphatic urethane finish coat. All products are single package and do not require blending with other components. Surface preparation requirements are provided in **Subsection 825.03.4; Existing Steel Structures**, of these Specifications.

**M.06.03 CAULKING AND SEALANTS.** Supply caulking and sealants that are compatible with the coating system specified for the project. Provide written confirmation from the coating manufacturer that the caulking and sealant products are compatible. The color of the caulking or sealants shall be the same as the finish coat color or clear.